B3 cont.

CLPCHPECQPQNGSVTCFGPEADQCVACAHYKDP, SEQ ID NO. 10, or a functional equivalent thereof; and

KPDLSYMPIWKFPDEEGA, SEQ ID NO. 11, or a functional equivalent thereof.

3. (Once Amended) The composition of claim 1 wherein the Th epitope is a promiscuous Th epitope of from 14 to 22 amino acids in length, and wherein said linker is from 1 to 15 amino acids in length.

4. (Once Amended) The composition of claim 1 wherein the Th epitope comprises a sequence selected from the group consisting of:

N-S-V-D-D-A-L-I-N-S-T-I-Y-S-Y-F-P-S-V, SEQ. ID. NO. 13, or a functional equivalent thereof;

P-G-I-N-G-K-A-I-H-L-V-N-N-Q-S-S-E, SEQ ID NO. 14, or a functional equivalent ther eof;

Q-Y-I-K-A-N-S-K-F-I-G-I-T-E-L, SEQ ID NO. 15, or a functional equivalent thereof;

F-N-N-F-T-V-S-F-W-L-R-V-P-K-V-S-A-S-H-L-E, SEQ ID NO. 16, or a functional equivalent thereof;

B4

L-S-E-I-K-G-V-I-V-H-R-L-E-G-V, SEQ ID NO. 17, or a functional equivalent thereof;

F-F-L-L-T-R-I-L-T-I-P-Q-S-L-N, SEQ ID NO. 18, or a functional equivalent thereof; and

T-C-G-V-G-V-R-V-R-S-R-V-N-A-A-N-K-K-P-E, SEQ ID NO. 19, or a functional equivalent thereof.

5. (Once Amended) The composition of claim 1 wherein the linker comprises the sequence GPSL, SEQ ID NO. 20.

SUB D1

6. (Once Amended) A composition for stimulating an immune response to HER-2 protein, wherein said composition is a multivalent peptide and comprises 2 or more HER-2 B cell epitopes, a Th cell epitope, and a template;

wherein said 2 or more HER-2 B cell epitopes are different, and wherein each of said 2 or or more HER-2 B cell epitopes is from 15 to 40 amino acids in length and comprises a sequence selected from the group consisting of:

TGTDMKLRLPASPETHLDM, SEQ ID NO. 1, or a functional equivalent thereof;

AVLDNGDPLNNTTPVTGASPGG, SEQ ID NO. 2, or a functional equivalent thereof;

LWKDIFHKNNQLALTLIDTNRS, SEQ ID NO. 3, or a functional equivalent thereof;
TLIDTNRSRACHPCSPMCKGSRCWGESSEDCQSLT, SEQ ID NO. 4, or a functional equivalent thereof;
ALVTYNTDTFESMPNPEGRYT, SEQ ID NO. 5, or a functional equivalent thereof;
PLHNQEVTAEDGTQRAEKCSKPCA, SEQ ID NO. 6, or a functional equivalent thereof;
PESFDGDPASNTAPLQPE, SEQ ID NO. 7, or a functional equivalent thereof;
LYISAWPDSLPDLSVFQNLQ, SEQ ID NO. 8, or a functional equivalent thereof;
LFRNPHQALLHTANRPEDE, SEQ ID NO. 9, or a functional equivalent thereof;
CLPCHPECQPQNGSVTCFGPEADQCVACAHYKDP, SEQ ID NO. 10, or a functional equivalent thereof;
KPDLSYMPIWKFPDEEGA, SEQ ID NO. 11, or a functional equivalent thereof; and
INGTHSCVDLDDKGCPAEQRAS, SEQ ID NO. 12, or a functional equivalent thereof; and

wherein the HER-2 B cell epitopes and the Th cell epitope are attached to the template.

9. (Once Amended) A composition for stimulating an immune response to HER-2 protein, wherein said composition is a chimeric peptide and comprises a HER-2 CTL epitope, a T helper (Th) epitope; and a linker joining said HER-2 CTL epitope to said Th epitope;
said HER-2 CTL epitope being from 8 to 12 amino acids in length and comprising a sequence selected from the group consisting of:
ILWKDIFHK, SEQ ID. NO. 21; or a functional equivalent thereof;
ILKETELRK, SEQ ID. NO. 22; or a functional equivalent thereof;
VLRENTSPK, SEQ ID. NO. 23; or a functional equivalent thereof;
AARPAGATL, SEQ ID. NO. 24; or a functional equivalent thereof;
LPASPETHL, SEQ ID. NO. 25; or a functional equivalent thereof;
LPTHDPSPL, SEQ ID. NO. 26; or a functional equivalent thereof;
CRWGLLLAL, SEQ ID. NO. 27; or a functional equivalent thereof;
RRFTHQSDV, SEQ ID. NO. 28; or a functional equivalent thereof;
GRILHNGAY, SEQ ID. NO. 29; or a functional equivalent thereof;
TYLPTNASL, SEQ ID. NO. 30; or a functional equivalent thereof;
EYVNARHCL, SEQ ID. NO. 31; or a functional equivalent thereof;
AYSLTLQGL, SEQ ID. NO. 32; or a functional equivalent thereof;

ALCRWGLLL, SEQ ID. NO. 33; or a functional equivalent thereof;
HLYQGCQV, SEQ ID. NO. 34; or a functional equivalent thereof;
QLRSLTEIL, SEQ ID. NO. 35, or a functional equivalent thereof;
B5 ILHNGAYSL, SEQ ID. NO. 36; or a functional equivalent thereof;
ILLVVVLGV, SEQ ID. NO. 37; or a functional equivalent thereof;
cont. DLTSTVQLV, SEQ ID. NO. 38; or a functional equivalent thereof;
VLVKSPNHV, SEQ ID. NO. 39; or a functional equivalent thereof;
KIFGSLAFL, SEQ ID. NO. 40; or a functional equivalent thereof; and
IISAVVGIL, SEQ ID. NO. 41; or a functional equivalent thereof.

13. (Once Amended) The composition of claim 9 wherein the Th epitope comprises a sequence selected from the group consisting of:
N-S-V-D-D-A-L-I-N-S-T-I-Y-S-Y-F-P-S-V , SEQ. ID. NO. 13, or a functional equivalent thereof;
P-G-I-N-G-K-A-I-H-L-V-N-N-Q-S-S-E, SEQ ID NO. 14, or a functional equivalent thereof;
Q-Y-I-K-A-N-S-K-F-I-G-I-T-E-L, SEQ ID NO. 15, or a functional equivalent thereof;
B6 F-N-N-F-T-V-S-F-W-L-R-V-P-K-V-S-A-S-H-L-E, SEQ ID NO. 16, or a functional equivalent thereof;
L-S-E-I-K-G-V-I-V-H-R-L-E-G-V, SEQ ID NO. 17, or a functional equivalent thereof;
F-F-L-L-T-R-I-L-T-I-P-Q-S-L-N, SEQ ID NO. 18, , or a functional equivalent thereof; and
T-C-G-V-G-V-R-V-R-S-R-V-N-A-A-N-K-K-P-E, SEQ ID NO. 19, or a functional equivalent thereof.

14. (Once Amended) The composition of claim 9 wherein the linker comprises the sequence GPSL, SEQ ID NO. 20.

18. (Once Amended) A composition for stimulating an immune response to a HER-2 protein, wherein said composition is a multivalent peptide and comprises 2 or more HER-2 CTL
B7 cell epitopes, a Th cell epitope, and a template;

wherein said 2 or more HER-2 CTL epitopes are different, and wherein each of said 2 or more HER-2 CTL epitopes comprises a sequence selected from the group consisting of:
ILWKDIFHK, SEQ ID. NO. 21; or a functional equivalent thereof;

ILKETELRK, SEQ ID. NO. 22; or a functional equivalent thereof;
VLRENTSPK, SEQ ID. NO. 23; or a functional equivalent thereof;
AARPAGATL, SEQ ID. NO. 24; or a functional equivalent thereof;
LPASPETHL, SEQ ID. NO. 25; or a functional equivalent thereof;
LPTHDPSPL, SEQ ID. NO. 26; or a functional equivalent thereof;
CRWGLLLAL, SEQ ID. NO. 27; or a functional equivalent thereof;
RRFTHQSDV, SEQ ID. NO. 28; or a functional equivalent thereof;
GRILHNGAY, SEQ ID. NO. 29; or a functional equivalent thereof;
TYLPTNASL, SEQ ID. NO. 30; or a functional equivalent thereof;
EYVNARHCL, SEQ ID. NO. 31; or a functional equivalent thereof;
AYSLTLQGL, SEQ ID. NO. 32; or a functional equivalent thereof;
ALCRWGLLL, SEQ ID. NO. 33; or a functional equivalent thereof;
HLYQGCQV, SEQ ID. NO. 34; or a functional equivalent thereof;
QLRSLTEIL, SEQ ID. NO. 35, or a functional equivalent thereof;
ILHNGAYSL, SEQ ID. NO. 36; or a functional equivalent thereof;
ILLVVVLGV, SEQ ID. NO. 37; or a functional equivalent thereof;
DLTSTVQLV, SEQ ID. NO. 38; or a functional equivalent thereof;
VLVKSPNHV, SEQ ID. NO. 39; or a functional equivalent thereof;
KIFGSLAFL, SEQ ID. NO. 40; or a functional equivalent thereof; and
IISAVVGIL, SEQ ID. NO. 41; or a functional equivalent thereof; and
wherein the HER-2 CTL epitopes and the Th cell epitope are attached to the template.

21. (Once Amended) A method of stimulating an immune response in a subject comprising administering to said subject a chimeric peptide selected from the group consisting of a chimeric peptide of claim 1, a chimeric peptide of claim 9, and a chimeric peptide which comprises one or more HER-2 B cell epitopes, one or more HER-2 CTL epitopes, a Th epitope and a linker linking said one or more HER-2 B cell epitopes and said one or more HER-2 CTL epitopes to said Th epitope;

wherein each of said one or more HER-2 B cell epitopes comprises a sequence selected from the group consisting of
TGTDMKLRLPASPETHLDM, SEQ ID NO. 1, or a functional equivalent thereof;
AVLDNGDPLNNTTPVTGASPGG, SEQ ID NO. 2, or a functional equivalent thereof;
LWKDIFHKNNQLALTLIDTNRS, SEQ ID NO. 3, or a functional equivalent thereof;

TLIDTNRSRACHPCSPMCKGSRCWGESSEDCQSLT, SEQ ID NO. 4, or a functional equivalent thereof;

ALVTYNTDTFESMPNPEGRYT, SEQ ID NO. 5, or a functional equivalent thereof;

PLHNQEVTAEDGTQRAEKCSKPCA, SEQ ID NO. 6, or a functional equivalent thereof;

PESFDGDPASNTAPLQPE, SEQ ID NO. 7, or a functional equivalent thereof;

LYISAWPDSLPDLSVFQNLQ, SEQ ID NO. 8, or a functional equivalent thereof;

LFRNPHQALLHTANRPEDE, SEQ ID NO. 9, or a functional equivalent thereof;

CLPCHPECQPQNGSVTCFGPEADQCVACAHYKDP, SEQ ID NO. 10, or a functional equivalent thereof;

KPDLSYMPIWKFPDEEGA, SEQ ID NO. 11, or a functional equivalent thereof; and

INGTHSCVDLDDKGCPAEQRAS, SEQ ID NO. 12, or a functional equivalent thereof;

wherein each of said one or more HER-2 CTL epitopes comprises a sequence selected from the group consisting of

ILWKDIFHK, SEQ ID. NO. 21; or a functional equivalent thereof;

ILKETELRK, SEQ ID. NO. 22; or a functional equivalent thereof;

VLRENTSPK, SEQ ID. NO. 23; or a functional equivalent thereof;

AARPAGATL, SEQ ID. NO. 24; or a functional equivalent thereof;

LPASPETHL, SEQ ID. NO. 25; or a functional equivalent thereof;

LPTHDPSPL, SEQ ID. NO. 26; or a functional equivalent thereof;

CRWGLLLAL, SEQ ID. NO. 27; or a functional equivalent thereof;

RRFTHQSDV, SEQ ID. NO. 28; or a functional equivalent thereof;

GRILHNGAY, SEQ ID. NO. 29; or a functional equivalent thereof;

TYLPTNASL, SEQ ID. NO. 30; or a functional equivalent thereof;

EYVNARHCL, SEQ ID. NO. 31; or a functional equivalent thereof;

AYSLTLQGL, SEQ ID. NO. 32; or a functional equivalent thereof;

ALCRWGLLL, SEQ ID. NO. 33; or a functional equivalent thereof;

HLYQGCQV, SEQ ID. NO. 34; or a functional equivalent thereof;

QLRSLTEIL, SEQ ID. NO. 35, or a functional equivalent thereof;

ILHNGAYSL, SEQ ID. NO. 36; or a functional equivalent thereof;

ILLVVVLGV, SEQ ID. NO. 37; or a functional equivalent thereof;

DLTSTVQLV, SEQ ID. NO. 38; or a functional equivalent thereof;

VLVKSPNHV, SEQ ID. NO. 39; or a functional equivalent thereof.

22. (Once Amended) A method of stimulating a response in a subject, comprising: administering a multivalent peptide to said subject; wherein said multivalent peptide comprises:

(a) 2 or more HER-2 B cell epitopes, a Th cell epitope, and a template, wherein said two or more HER-2 B cell epitopes are different, and wherein said HER-2 B cell epitopes and said Th cell epitope are attached to said template, or

(b) 2 or more HER-2 CTL epitopes, a Th cell epitope, and a template, wherein said two or more HER 2 CTL-epitopes are different, and wherein said HER-2 CTL epitopes and said Th cell epitope are attached to said template, or

(c) one or more HER-2 B cell epitopes, one or more HER-2 CTL epitope, a Th cell epitope, and a template, wherein said one or more HER-2 B cell epitopes, said one or more HER-2 CTL epitopes and said Th cell epitope are attached to said template;

wherein each of said HER-2 B cell epitopes comprises a sequence selected from the group consisting of: .

TGTDMKLRLPASPETHLDM, SEQ ID NO. 1, or a functional equivalent thereof;

B3 AVLDNGDPLNNTTPVTGASPGG, SEQ ID NO. 2, or a functional equivalent thereof;

Cont. LWKDIFHKNNQLALTLIDTNRS, SEQ ID NO. 3, or a functional equivalent thereof;

TLIDTNRSRACHPCSPMCKGSRCWGESSEDCQSLT, SEQ ID NO. 4, or a functional equivalent thereof;

ALVTYNTDTFESMPNPEGRYT, SEQ ID NO. 5, or a functional equivalent thereof;

PLHNQEVTAEDGTQRAEKCSKPCA, SEQ ID NO. 6, or a functional equivalent thereof;

PESFDGDPASNTAPLQPE, SEQ ID NO. 7, or a functional equivalent thereof;

LYISAWPDSLPDLSVFQNLQ, SEQ ID NO. 8, or a functional equivalent thereof;

LFRNPHQALLHTANRPEDE, SEQ ID NO. 9, or a functional equivalent thereof;

CLPCHPECQPQNGSVTCFGPEADQCVACAHYKDP, SEQ ID NO. 10, or a functional equivalent thereof;

KPDLSYMPIWKFPDEEGA, SEQ ID NO. 11, or a functional equivalent thereof; and

INGTHSCVDLDDKGCPAEQRAS, SEQ ID NO. 12, or a functional equivalent thereof; and

wherein each of said HER-2 CTL epitopes comprises a sequence selected from the group consisting of:

ILWKDIFHK, SEQ ID. NO. 21; or a functional equivalent thereof;

ILKETELRK, SEQ ID. NO. 22; or a functional equivalent thereof;

VLRENTSPK, SEQ ID. NO. 23; or a functional equivalent thereof;
AARPAGATL, SEQ ID. NO. 24; or a functional equivalent thereof;
LPASPETHL, SEQ ID. NO. 25; or a functional equivalent thereof;
LPTHDPSPL, SEQ ID. NO. 26; or a functional equivalent thereof;
CRWGLLLAL, SEQ ID. NO. 27; or a functional equivalent thereof;
RRFTHQSDV, SEQ ID. NO. 28; or a functional equivalent thereof;
GRILHNGAY, SEQ ID. NO. 29; or a functional equivalent thereof;
TYLPTNASL, SEQ ID. NO. 30; or a functional equivalent thereof;
EYVNARHCL, SEQ ID. NO. 31; or a functional equivalent thereof;
B8 AYSLTLQGL, SEQ ID. NO. 32; or a functional equivalent thereof;
ALCRWGLLL, SEQ ID. NO. 33; or a functional equivalent thereof;
corrd. HLYQGCQV, SEQ ID. NO. 34; or a functional equivalent thereof;
QLRSLTEIL, SEQ ID. NO. 35, or a functional equivalent thereof;
ILHNGAYSL, SEQ ID. NO. 36; or a functional equivalent thereof;
ILLVVVLGV, SEQ ID. NO. 37; or a functional equivalent thereof;
DLTSTVQLV, SEQ ID. NO. 38; or a functional equivalent thereof;
VLVKSPNHV, SEQ ID. NO. 39; or a functional equivalent thereof;
KIFGSLAFL, SEQ ID. NO. 40; or a functional equivalent thereof; and
IISAVVGIL, SEQ ID. NO. 41; or a functional equivalent thereof.

Please cancel claims 2, 10, 23 and 24 without prejudice or disclaimer.

Please add the following claims:

SUB D3 B9 31. (New) The multivalent peptide of claim 6, wherein the multivalent peptide comprises a HER-2 B cell epitope which comprises INGTHSCVDLDDKGCPAEQ, SEQ ID NO. 42 or a functional equivalent thereof, a HER-2 B cell epitope which comprises SEQ ID NO. 6 or a functional equivalent thereof, and a HER-2 B cell epitope which comprises SEQ ID NO. 9 or a functional equivalent thereof

32. (New) A method of treating a subject with cancer comprising administering a mixture of chimeric peptides to the subject, wherein said mixture comprises 2 or more chimeric peptides, wherein each of said 2 or more chimeric peptides comprise a HER-2 B cell epitope, a T helper

(Th) epitope; and a linker joining said HER-2 B cell epitope to said Th epitope; wherein the HER-2 B cell epitope of said 2 or more chimeric peptides are different, and comprise a sequence selected from the group consisting of:

TGTDMKLRLPASPETHLDM, SEQ ID NO. 1, or a functional equivalent thereof;

AVLDNGDPLNNTTPVTGASPGG, SEQ ID NO. 2, or a functional equivalent thereof;

LWKDIFHKNNQLALTLIDTNRS, SEQ ID NO. 3, or a functional equivalent thereof;

TLIDTNRSRACHPCSPMCKGSRCWGESSEDCQSLT, SEQ ID NO. 4, or a functional equivalent thereof;

ALVTYNTDTFESMPNPEGRYT, SEQ ID NO. 5, or a functional equivalent thereof;

PLHNQEVTAEDGTQRAEKCSKPCA, SEQ ID NO. 6, or a functional equivalent thereof;

B9 PESFDGDPASNTAPLQPE, SEQ ID NO. 7, or a functional equivalent thereof;

LYISAWPDSLPDLSVFQNLQ, SEQ ID NO. 8, or a functional equivalent thereof;

Conch LFRNPHQALLHTANRPEDE, SEQ ID NO. 9, or a functional equivalent thereof;

CLPCHPECQPQNGSVTCFGPEADQCVACAHYKDP, SEQ ID NO. 10, or a functional equivalent thereof;

KPDLSYMPIWKFPDEEGA, SEQ ID NO. 11, or a functional equivalent thereof;

INGTHSCVDLDDKGCPAEQRAS, SEQ ID NO. 12, or a functional equivalent thereof; and

INGTHSCVDLDDKGCPAEQ, SEQ ID NO. 42.

33. (New) The method of claim 32 wherein the subject is treated with a chimeric peptide comprising a HER-2 B cell epitope which comprises SEQ ID NO. 42 or a functional equivalent thereof, a chimeric peptide comprising a HER-2 B cell epitope which comprises SEQ ID NO. 6 or a functional equivalent thereof, and a chimeric peptide comprising a HER-2 B cell epitope which comprises SEQ ID NO. 9 or a functional equivalent thereof.

REMARKS

By the present amendment, Applicants are hereby amending the specification to correct an obvious typographical error in Table 1 and to provide a substitute Sequence Listing for the Sequence Listings that were sent to the Patent Office on April 9, 2001, November 21, 2001, and April 1, 2002. The typographical error in Table 1 is the number which identifies the position of the first amino acid in the last sequence in the Table (also known as DW4). In the original Table 1 this position is incorrectly identified as being amino acid residue number "630" instead of amino acid residue "628". The error is obvious because the last sequence which appears in